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THE BIRDS OF LOWER EGYPT.

By C. B. TICEHURST, M.A., M.R.C.S., M.B.O.U.

MANY people have been to Lower Egypt, and have noted the ornithology of that interesting place, and yet it has struck me that really not a great deal is known at any rate about the breeding birds there, since most Englishmen who have studied the avifauna at all have done so either in the winter or early spring. As Mr. Nicoll has begun, in the '*Ibis*,' a series of admirable papers on the ornithology of various parts of the Delta, in the hope, as he says, that they may be of some use to anyone who, at some future date, may collect all the material obtainable for a revised work on the Birds of Egypt, I have thought that perhaps my few notes also should be recorded for the same purpose, especially as my visit occurred after the beginning of the breeding season. Unfortunately, I was only in Egypt a very short time, *viz.* April 28th to May 19th, 1909, the first fortnight of which I was staying at the Giza Gardens, the last week on the shores of Lake Mariotis, at Alexandria. Perhaps the fact that I devoted the whole three weeks entirely to birds made up to some extent for the shortness of my stay.

From the following notes it must not be inferred that, because I have not recorded any one species, it was not there; most of the spring migration had passed through when I arrived, and so I missed many species, some by only a few days, and, as time was very limited, there are naturally many resident birds which I did not happen to come across.

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Alexandria, for the kind help they gave me in every way, and for making my visit a most enjoyable one.

For convenience sake, I have used the *same nomenclature* as Mr. Nicoll has used in his papers on Egyptian ornithology in the '*Ibis*'.

1. *Monticola saxatilis* (Linn.).—One pair and a male seen in some palm-trees on the edge of the desert near the Great Pyramids on April 30th. A male shot had the testes slightly enlarged, and its gizzard contained beetles. These birds were, I believe, on migration.

2. *Saxicola œnanthe* (Linn.).—A few were seen on the edge of the desert near the Great Pyramids on April 30th, and a single bird on the shore of Lake Mariotis on May 15th. None appeared to be breeding, and they were evidently on migration.

3. *S. isabellina*, Cretzschm.—Two or three seen and one obtained on April 30th near the Great Pyramids. From the state of the organs I should say they were not breeding. One seen at Inchas on May 2nd.

4. *S. lugens*, Licht.—A fair number of pairs seen in the Wadi Hof, near Helouan, on May 5th and 7th, where it is the commonest Chat. Females obtained had evidently laid and were sitting. The plumages of the sexes appeared to be similar. The gizzards contained beetles.

5. *S. leucopyga* (Brehm).—This was the next commonest of the Chats breeding in the Wadi Hof. A female obtained was of the white-crowned form, and had an enlarged ovary and oviduct, and a well-marked incubation patch. This species seemed to keep to the highest sides of the Wadi, where this is very rocky and steep, and it is a good deal wilder than the other species. One bird I evidently flushed off its nest amongst the rocks, but unfortunately I had no time to look for the nest.

6. *S. monacha*, Temm.—Two females and a male were seen in the Wadi Hof on May 5th. The females were collecting food, but whether they were feeding young or otherwise could not be ascertained.

7. *Pratincola rubetra* (Linn.).—Three or four scattered birds seen near the Great Pyramids on April 30th were evidently on migration, and this was the only time I met with this species.

8. *Ruticilla phoenicurus* (Linn.).—A few seen in the Giza Gardens on April 28th and 29th, and some of both sexes on the edge of the desert on the 30th and May 2nd; the last was seen on May 9th. The ovary of a bird obtained was not enlarged.

9. *Daulias luscinia* (Linn.).—Few seen in the Giza Gardens on April 29th. These did not stop long, and no song was heard. The ovary of a bird obtained was not enlarged.

10. *Sylvia cinerea*, Bechst.—One seen on the edge of the desert near the Great Pyramids on April 30th.

11. *S. curruca* (Linn.).—One seen in the Giza Gardens on April 29th, and two in the cultivation on May 2nd. A single bird was seen near Giza on May 11th.

12. *Aëdon galactodes* (Temm.).—Common in the Giza Gardens and in the cultivation round Cairo up to the edge of the desert in suitable places. A nest, nearly finished, was found on April 30th in a short palm; it was placed between the leaves and the trunk, about four feet from the ground. The nest was loosely constructed of dried "grasses," and large for the size of the bird. Another nest built in a hedge in the Gardens contained three eggs on May 12th.

13. *Phylloscopus sibilatrix erlangeri*, Hartert.—Quite a number in the Giza Gardens on April 28th and 29th, and a few on the 30th and May 1st. One or two seen at Alexandria on May 13th, and the last on the 15th. This subspecies is noticeably greyer-green on the upper parts than *P. s. sibilatrix* is. Like other migrant Warblers, they were quite silent. The specimens obtained, which I believe had arrived a day or so before, were very fat, a condition I have noticed in other migrants; whether the birds are fat when they arrive, or whether they halt to put on fat lost before migrating again further, I know not. In marked contrast I found nearly all breeding birds to have little or no fat.

14. *P. rufus*, ? subsp.—One seen in the Giza Gardens on May 18th, a very late migrant. It was silent.

15. *Scotocerca inquieta inquieta* (Cretzschm.).—Seen only in the Wadi Hof, where it was breeding; a male and female obtained both had incubation patches. Like other birds in the desert, many more are seen in the late afternoon than in the heat of the day. The food consists of small insects. When sitting on a stone the tail is "cocked up" over the back.

16. *Drymæca gracilis deltæ* (Rchw.).—Very common in the cultivation round Cairo, Inchas, and Alexandria, and also in the Giza Gardens. Two nests found were about three feet off the ground, one in a small "bushy" palm on May 9th, the other in some reeds cut four feet from the ground on May 15th; they contained four eggs and three eggs respectively, just hatching. The eggs were of a pinkish ground colour, with small spots of light brownish red; in one clutch the spots were aggregated together into a zone round the greatest circumference. The young are devoid of down. The nests, which were made of dry bents and lined with white "cotton-seed," are domed, and have the entrance in the same position as the Long-tailed Tit's has.

17. *Cisticola cisticola* (Temm.).—Common in the cultivation both at Inchas and near the Great Pyramids, where I found a pair building on May 9th on a grassy bank. The female had an incubation patch, so that either one brood had already been reared, or the first nest had been destroyed in the harvesting.

18. *Hypolais pallida* (Hempr. & Ehr.).—Common in the Giza Gardens, and also noted in the palm-groves near the Great Pyramids, and in the tamarisks round Lake Mariotis. The song is remarkably like that of *Acrocephalus streperus*, but it struck me as being more warbling and not so harsh in tone. A very neat cup-shaped nest made of dry grasses and lined with white "cotton-seed" was ready for eggs on May 9th.

19. *Acrocephalus phragmitis* (Bechst.).—Single birds were seen at Inchas on May 2nd, and several on Lake Mariotis on May 15th; the sexual organs were not enlarged, the birds were quite silent, and had a considerable amount of fat.

20. *A. stentoreus* (Hempr. & Ehr.).—Common at Inchas and round Lake Mariotis. They seem to choose the tall "feather-head" reed-beds, where the water is deepest, for nesting. A nest found on May 13th was placed within three inches of the water's surface, and contained four young, which were devoid of down. The song appeared to me to be like that of *A. turdoides*. The tarsi are lead-coloured.

21. *Motacilla flava pygmaea* (Brehm).—Very common in the cultivation round Cairo, and near the Great Pyramids, where they were breeding. Some had young on the wing by May 9th.

The note and song appeared to me to be rather different to those of *M. rayi*. I also met with this form at Inchas, near the Sakkara Pyramids, and round Alexandria. In the Bull. B. O. C. vol. xxi. p. 29, I resuscitated this subspecies, which, since A. E. Brehm described it, had apparently been lost sight of, and pointed out the well-marked distinguishing points. At that time even adults appeared to be rare in collections, and it seems probable that the nestling plumage was practically unknown; so perhaps a few words on this stage of plumage may not be out of place. Such a bird, shot on May 9th, 1909, at Abu Roash, differs from a *M. flava flava* in similar plumage (Gooiland, Holland) in having a very slightly marked dull-coloured superciliary, and the black line surmounting this duller and much narrower, the longitudinal lines on the throat and the pectoral collar much less marked; this, however, and the browner edgings to the feathers of the upper part may be an individual variation.

22. *Anthus trivialis* (Linn).—Three seen and one shot on some marshy ground round the edge of Lake Mariotis on May 18th. No song or note heard; the ovary was not enlarged. These birds' actions were like those of a Meadow-Pipit's—quite different to the soaring flights seen in the nesting-time.

23. *Oriolus galbula*, Linn.—A good many seen in the Giza Gardens on migration, April 28th to May 2nd. They seemed very partial to mulberry-trees, on the fruit of which they were feeding. Old adult males seemed to be in the minority. Unlike many other migrants, this species was occasionally heard singing.

24. *Lanius excubitor elegans*, Swains.—A bird, which has been referred to this species by Dr. Hartert, was obtained in the Wadi Hof on May 5th. It was an incubating female, and from the state of the organs had recently laid. The breeding quarters of this species, which were said to be in Algiers, Tunis, and Tripoli (Hartert, Vög. Pal. Fauna, p. 428), must now be extended to the Egyptian Delta.

25. *L. pomeranus pomeranus*, Sparr.—A female obtained on the edge of the cultivation near the Great Pyramids on April 30th was the only one seen. The two central tail-feathers of this bird show only a trace of white at the base, whereas *L. pomeranus niloticus* has fully 3 cm. of white. The ovary was

not enlarged, and the gizzard contained beetles. Mr. Nicoll tells me that *L. p. niloticus* is much the commoner species in Giza Province, and he has apparently not met with the typical form himself.

26. *L. nubicus*, Licht.—One seen near the Great Pyramids on April 30th, and one in the Giza Gardens a few days later.

27. *Muscicapa grisola*, Linn.—One or two seen near Giza nearly every day; the last was seen on May 15th at Lake Mariotis. The sexual organs were not enlarged. A rather tired and out-of-place migrant was shot in the rocky valley of Wadi Hof on May 5th; it was not at all fat.

28. *M. atricapilla atricapilla*, Linn.—One seen in the palms near the Great Pyramids on April 30th, and one female obtained at Inchas on May 2nd; its ovary was not enlarged.

29. *Hirundo rustica savignii*, Steph.—Common round the Great Pyramids, the Pyramids of Sakkara, and at Inchas; a female shot at the latter place on May 2nd had a soft-shelled egg in the oviduct. Young on the wing were noted on May 9th. Only one seen at Alexandria, possibly because the native villages, the mud houses of which seem to be their favourite breeding quarters, were not visited.

30. *H. rustica rustica*, Linn.—Common round Cairo until May 13th, when I left. From May 14th to 18th great numbers were passing Lake Mariotis in a north-east direction. Numbers increased towards evening every day, when flock after flock went by, together with Sand-Martins and House-Martins. Mr. Raymond Clarke, of Alexandria, informs me (*in litt.*) that this Swallow was still passing through that place up to June 6th, when his opportunities for observing ceased.

31. *Chelidon urbica* (Linn.).—A flock seen near Giza on April 30th, and single birds on May 7th near Helouan. At Lake Mariotis, on May 14th to 18th, this species was migrating in small numbers with the last species.

32. *Cotile riparia riparia* (Linn.).—Large flocks near the Great Pyramids on April 30th, and large numbers flying north-east in the evenings of May 14th and 15th at Lake Mariotis, together with Swallows and Martins.

33. *C. riparia shelleyi*, Sharpe.—Common on the edge of the cultivation near the Great Pyramids, and at Inchas, where on

May 2nd I found a large colony breeding in the sandy sides of a canal-bank three feet high. The nests, which were merely a scanty collection of small bents with no lining, were situated about three feet in, and contained fresh or slightly incubated eggs; four seemed to be the full number. The eggs are pure white, and measure (average of eight) $17\cdot8 \times 12\cdot5$ mm. Several of the nesting-holes were also tenanted by a small toad!

34. *C. rupestris obsoleta*, Cab.—A few seen only in the Wadi Hof on May 5th and 7th. A female obtained had a large incubation patch.

35. *Passer domesticus*, subsp. ?—The Sparrow round Cairo is distinctly greyer on the upper parts than in *P. domesticus domesticus*, though it does not appear to be quite so grey or bright as the Sparrow of the Fayoum, *P. d. niloticus* of Nicoll and Bonhote (Bull. B. O. C. vol. xxiii. pp. 101–2). I cannot, however, agree with Mr. Nicoll ('Ibis,' July, 1909, p. 476) in considering that the House-Sparrow found in the Delta is nearest to *P. d. indicus*, since in the former the ear-coverts are not pure white, and the chestnut stripes on the head do not meet to form a nuchal band as in the majority of *indicus*. The Delta Sparrow appears to me to be nearest *P. d. niloticus*. Dr. Madarasz has lately (Ann. Mus. Nat. Hungary, 1911, p. 340) described the Sparrow of Alexandria as *P. alexandrinus*; as I have not been able to see the type of this race, I am unable to say whether the Cairo birds belong to it or not, but it seems likely.

36. *Erythrocercus githaginea* (Licht.).—Single birds seen at the Wadi Hof on May 5th and 7th; on the latter day Mr. Nicoll secured an adult ('Ibis,' July, 1909, p. 477). These birds seemed rather wild, and, like many desert birds, are adepts at disappearing into space! The pink at the base of the tail is noticeable in flight.

37. *Galerida cristata nigricans*, Brehm.—A very typical specimen (a female) of this race was obtained in the cultivated land at Inchas, in the Delta, on May 2nd. It had the ovary much enlarged. Crested Larks obtained at the Abu Roash, near the Great Pyramid, which in May were nesting, however, present difficulties. They differ from typical *nigricans* in being less dark on the upper surface, and compared with a series of *G. c. mæritica* of Nicoll and Bonhote (Bull. B.O.C. vol. xxiii. p. 101), from

Fayoum, individuals cannot with certainty be distinguished. On the average, the Fayoum birds are a trifle greyer on the upper surface, and it seems to me at present doubtful whether *mæritica* is sufficiently distinct to warrant separation as a separate race. On May 15th I obtained a female Crested Lark on an island in Lake Mariotis, near Alexandria, which appears to Mr. Bonhote and myself to be identical with specimens of *mæritica* from the Fayoum. This bird was feeding young together with its mate, a much paler bird with a longer bill, which bird appears to be identical with the type of *G. cristata caroli* of Hartert (from the Wadi-el-Natrûn), except that it has rather a shorter wing. *Galerida cristata altirostris* of Brehm, which was described from Upper Egypt (exact locality unknown), I did not meet with. From examining a series of these birds in the Tring Museum, including the type, it appears to me to be a perfectly good race, and differing from the Fayoum birds and Abu Roash birds in the much more yellowish upper parts.

38. *G. cristata caroli*, Hartert.—As mentioned above, I obtained a specimen of this subspecies at Lake Mariotis, feeding young and paired with a much paler bird. This race hitherto has only been found in the Wadi-el-Natrûn, about 100 kilometres S.S.E. from Lake Mariotis. On comparing a series of these birds with a series of *altirostris* (including the types of both), there seems to be a considerable amount of intergrading both in colour and measurements. As *caroli* is said to have a longer bill than has *altirostris*, and a longer wing than the other forms of Egyptian Crested Larks, I give the measurements of the males I have examined :—

Six specimens, *Galerida cristata caroli*. Wing, 100–108 mm.; bill,* 12·5–15 mm.

Seven specimens, *G. c. altirostris*. Wing, 100–107·5 mm.; bill, 11·5–14 mm.

Eight specimens, *G. c. mæritica*. Wing, 102–109·5 mm.; bill, 12·25–14·25 mm.

Three specimens, *G. c. nigricans*. Wing, 100–102·5 mm.; bill, 12·5–13 mm.

* The bill measurement is taken from the anterior part of the external nares to the tip—the only way in which I consider accuracy and uniformity of measurement can be obtained.

From the above it seems obvious that the wing and bill measurements alone of individuals are of little use in determining the race. It seems to me that there is much to be learnt about the Crested Larks of the Egyptian Delta. Until recent years the various races have been more or less "lumped" together—to my mind, not a very scientific procedure, though undoubtedly the simplest—and little attempt has been made to work out the races and their distribution; so that it is to be hoped that future workers will pay more attention to these birds, and elucidate the very interesting problem as to why in Egypt there are found three or four recognizable races of Crested Larks. So far it seems to me certain that *caroli* is *not* confined to the Wadi-el-Natrûn, and that *mæritica* (if it be distinct) is *not* found only in the Fayoum, and it seems more than likely that the race of Crested Lark of any one area is correlated to the nature of the soil in that area, and that on the border-line interbreeding takes place. The food of Crested Larks obtained consisted of corn, other seeds, and beetles. The notes of the various forms did not appear to me to differ from those of *G. cristata cristata*.

39. *Ammomanes deserti isabellina* (Temm.).—Several pairs were met with in the desert near Helouan; judging from the actions of the birds and the state of their sexual organs they were breeding. The song, which is pretty and warbling, is uttered hovering, but also when on the ground. Food consists of vegetable-matter, seeds, and stray grains of corn—the latter probably dropped from some passing cavalcade, as there was no cultivation for some miles distant. With the sun on them these birds look almost pink in colour.

40. *Calandrella brachydactyla longipennis* (Eversm). — A small flock seen on the edge of the desert, near the Great Pyramids, on April 30th. On May 9th a single one only was seen and obtained; an old shot-wound had evidently delayed its migration. A small flock, which was very wild, was seen at Inchas on May 2nd. The specimen obtained had the testes only very slightly enlarged, and in the gizzard were some seeds and corn. Whether all birds seen belonged to this form one cannot say; when the plumage is worn it is not always easy to differentiate this race from the typical race.

41. *C. minor nicolli*, Hartert.—This form I found on the semi-

cultivated desert on the northern shore of Lake Mariotis, and on an island in the lake on May 15th and 18th. The males were in full song and soaring, but neither the song nor the flight was so sustained as in *Alauda arvensis*. From the state of the sexual organs and the incubation patches on the females obtained I infer that this subspecies was breeding there. Dr. Hartert described this form from birds obtained by Mr. M. J. Nicoll in January, 1908, at Damietta (Bull. B.O.C. vol. xxv. p. 9), and he there describes the bill as "a dark horn-grey, almost blackish in the skin." This may be so in winter plumage, but the birds I obtained in the breeding season all had the bill orange-yellow, with a blackish tip; in the dried skin the colour is pale horn, there being no trace of orange-yellow left. The breeding range of this subspecies is as yet undefined, but the birds I obtained are the first to be recorded from a breeding quarter.

42. *Sturnus vulgaris*, subsp.?—Starlings had evidently left Egypt by the end of April. I only saw two birds on an island in Lake Mariotis; they were quite unapproachable.

43. *Corvus cornix cornix*, Linn.—Exceedingly common round Cairo, and young were on the wing early in May. In the Giza Gardens it is too numerous. I agree with Mr. M. J. Nicoll ('Ibis,' July, 1909, p. 481) that the Egyptian Hooded Crow is not separable from the Northern European form. The distribution of this species in Egypt wants further investigation. In going by rail from Cairo to Alexandria one sees "Hoodies" in quantities at first, but the number soon falls off, and after passing Teh-el-Barud *none* were seen. This apparent limitation of the range northwards is very curious, as the character of the country does not seem to alter, though it is worth noting that Teh-el-Barud is near where the railway line leaves the Nile, and it is possible that the river has some influence on the distribution. Capt. Flower tells me he has independently noticed this curious distribution. Round Alexandria this species was not seen. Mr. Cavendish Taylor ('Ibis,' 1891, p. 478) also remarks on its absence there, and in the 'Ibis,' 1867, he says that, since there are no trees at Suez, there are no Hooded Crows; this explanation, however, would not apply to Alexandria.

44. *C. corax umbrinus*, Sund.—Seen in the desert near Helouan on May 7th, on which date young were on the wing.

There was an old nest on a ledge of a precipitous part of the Wadi Hof, which, according to the Bedouins, had been resorted to year after year.

45. *Cypselus apus murinus*, Brehm.—The Pallid Swift was seen in the desert near Helouan on May 5th and 7th, and at the Sakkara Pyramids on May 12th. This species appears to be much paler than *C. apus* when one has a fairly close view of it.

C. apus apus (Linn.) was not identified for certain, though some birds seen flying over the cultivated land near the Great Pyramids, on April 30th, I thought belonged to this species. There were quite a number of them flying high to the north, suggestive of a migratory movement. Most of the Pallid Swifts I saw were in pairs or single birds.

46. *Caprimulgus europaeus*, Linn.—One or two birds seen in the Giza Gardens on several occasions between April 30th and May 13th seemed to me to be too dark for *C. aegyptius*.

47. *C. aegyptius*, Licht.—The only occasion on which I was out on the desert at dusk I saw a Nightjar, which may have belonged to this species, viz. on May 7th at Helouan.

48. *Ceryle rudis* (Linn).—One seen at Inchas, in the Delta, on May 2nd. Several used to visit the ponds in the Giza Gardens during my stay, and were to be seen sitting on the railings round one of the ponds, especially early in the morning.

49. *Coracias garrulus*, Linn.—One seen sitting in a date-palm on the edge of the cultivation near Abu Roash on April 30th. I did not hear it utter any note.

50. *Merops apiaster*, Linn.—Many seen in flocks during the last few days of April and the beginning of May round Cairo, and during my stay it was a frequent visitor to the Giza Gardens. One shot on the edge of the cultivation near Abu Roash had bees in its gizzard, and the feathers of the abdomen smeared with honey. The ovary was not enlarged.

51. *M. persicus*, Pall.—I came across a small colony of these birds on some semi-cultivated ground at Inchas, in the Delta, on May 2nd. They were in pairs, and several were hawking over and sitting on a bare piece of ground; that they were nesting there I feel sure, and a female obtained had, judging by the condition of the ovary and oviduct, recently laid; moreover, it had a large incubation patch.

52. *M. viridis cleopatra*, Nicoll.—One seen in the date-palms near Abu Roash on April 30th; it was very wild. Mr. Nicoll has lately (Bull. B.O.C. vol. xxvii. p. 11) separated the Egyptian Green Bee-eater from the Sudanese form.

53. *Upupa epops epops*, Linn.—Many seen on April 30th on the edge of the cultivation near the Great Pyramids; one obtained had long yellow larvæ in its gizzard. On visiting the same place on May 9th I only saw one. I did not meet with the larger-billed form—*Upupa epops major* of Brehm—so far as I could determine.

54. *Cuculus canorus*, Linn.—I only saw one Cuckoo, on May 2nd, in a "bag" of a European "sportsman"; he had shot it, together with Turtle-Doves, Common Bee-eaters, and Hoopoes, between Inchas and Cairo. He discoursed to me on the gastronomic properties of his spoils!

55. *Strix flammea kirchhoffi* (Brehm).—Frequently seen in the Giza Gardens during my visit.

56. *Athene noctua glaux* (Savigny).—Frequently seen in the Giza Gardens, and also met with near the Sakkara Pyramids.

57. *Neophron percnopterus* (Linn.).—Both young and adults seen in the distance over the cultivation near the Great Pyramids on May 9th.

58. *Circus*, ? sp.—I saw a pale-coloured Harrier in the distance at Inchas on May 2nd, which may have been a Pallid Harrier (*Circus swainsoni*); it certainly was not a Montagu's Harrier.

59. *C. aeruginosus*, Linn.—Two or three adult birds seen on May 15th to 18th hawking over the swampy reed-beds on Lake Mariotis, where they were probably breeding. I was surprised not to find this bird more common there.

60. *Buteo* sp. ?—A pair of Buzzards which were seen in the distance in the Wadi Hof, near Helouan, on May 5th, apparently had an eyrie in the neighbourhood. I fancy they were *B. v. desertorum*, but could not be sure.

61. *Aquila imperialis*, Bechst.—One seen over the desert near Helouan on May 7th.

62. *Milvus migrans aegyptius* (Gm.).—Numerous everywhere round Cairo, nesting commonly in the Giza Gardens, and even in the trees in some of the principal streets of Cairo. In a part

of the suburbs of the city I estimated one evening that there were several hundreds on the wing at once. On my arrival in Cairo (April 28th) young were flying; one adult with enlarged ovary, obtained in the Giza Gardens, had the bill dark horn-colour instead of yellow, though plenty were seen in the same place with the bill the latter colour. Mr. Nicoll has suggested ('Ibis,' October, 1909, p. 630) that these specimens are in ill-health, but it seems to me that, as the chief distinguishing character between *M. migrans aegyptius* and *M. migrans migrans* is the colour of the bill and iris, it is possible that both forms occur in Egypt; and, indeed, A. L. Adams ('Ibis,' 1864, pp. 9-10) noted that both forms were found there, and he thought that *migrans* was the commoner up as far as the First Cataract, while at Edfoo he saw both. With this distribution S. S. Allen ('Ibis,' 1864, pp. 234-5) did not agree, and he considered *M. migrans (ater)* to be the commoner species in the Nile Valley above Cairo; but in the Delta the reverse to be the case, and here he could not find one *migrans*, while round Cairo the numbers were equally divided. Both agree that young of both species are easily confounded. Cavendish Taylor ('Ibis,' 1867, p. 53) records that he never saw an adult *migrans*, and all birds which he considered to be adult were *aegyptius*, but he did not seem certain as to which species immature birds belonged. Shelley, too ('Ibis,' 1871), did not meet with *migrans* for certain. So it seems to me still a doubtful question as to whether there are—at all events, round Cairo—two closely allied forms, *M. m. migrans* and *M. m. aegyptius*, breeding side by side, and whether the real explanation of these differences of opinion is not to be found in the suggestion that *aegyptius* does not get the yellow bill until the bird is two years old; I am certain, at least, that the bird I obtained was at least one year old, and had bred. Observations on captivity birds of known age might throw some light on the question.

The distribution of the Kite in Egypt, too, wants carefully working out. For some reason there appears to be a limitation northwards of its range, such as noticed in the case of the Hooded Crow, for going from Cairo to Alexandria by rail I saw no Kites after leaving Choubri-el-Maruba, nor did I see any round Alexandria, though I believe it is said to be found very

rarely there, and yet the conditions in that locality would appear to be much the same as those round Cairo. Cavendish Taylor ('Ibis,' 1891, p. 473) records that no Kites were to be seen in Alexandria, and Mr. W. L. S. Loat did not meet with any in the Wadi-el-Natrûn, and recorded it (p. c. 1906, p. 120) as uncommon at Lake Menzaleh.

63. *Falco tinnunculus*, Linn.—Single birds were seen over the cultivated land on several occasions near the Great Pyramids, and at Inchas; one obtained on May 9th near the former locality was a young male of the previous year in full moult. Judging by the state of the testes it certainly was not breeding. Its gizzard contained a Lizard (*A. sentilata*) and a Mole-Cricket.

64. *Ardea cinerea*, Linn.—Several seen in the distance on Lake Mariotis on May 15th.

65. *A. bubulcus*, Audouin.—A bird seen from the railway in some marshy ground a few miles south of Alexandria I believe belonged to this species. The Buff-backed Heron seems to be a rarer bird in the Delta than formerly, as Mr. J. H. Gurney tells me he met with it abundantly almost everywhere in the Delta in 1875.

66. *A. ralloides*, Scopoli.—In a large tamarisk swamp in an island in Lake Mariotis I met with about fifty of these birds together on May 15th. These birds were very wild. During flight the neck is bent back as in the case of the other Herons, the beak is very prominent, and, compared with the rest of the plumage, the back looks very dark, almost black, in bright sunlight. After much stalking one was shot for me by an Arab. The ovary was much enlarged, and from the state of the oviduct it was evident that an egg had been recently laid; moreover, there was a well-defined incubation patch. The gizzard contained a small fish, locally known as "Baultee" (as near as I can get it). On questioning the local Arabs, they informed me that these birds nested in a tamarisk swamp about three miles away on the other end of the island.

67. *Ardetta minuta* (Linn.).—Many birds of this species were met with in the swampy reed-beds round Lake Mariotis and on the above-mentioned island during my visit, May 15th to 18th. Birds obtained had the same species of fish in its gizzard as found in the Squacco. Females had incubation patches, and from the

state of the organs had quite recently laid ; one male, with very large testes, was very fat, a condition which, in my experience, is not at all common in breeding birds of any species. When disturbed during the day the flight is slow and flopping, and, as a rule, not long ; in fact, one when flushed flew into some tall reeds near by, and settled near the top of the stems, about twelve feet above the water, where it assimilated well with its surroundings as it sat "sideways" on the stem and "drew itself up." At dusk this species "flights" apparently to its feeding-grounds, and it then flies quite quick and straight, the beak being prominent and the neck bent. At no time did I hear any sound uttered. This species was also met with at Inchas, in the Delta, on May 2nd.

68. *Nycticorax griseus* (Linn.).—I only saw this bird in the Giza Gardens where a well-known flock of varying numbers are to be seen resting by day on some bushes in the Pelican Pond. At dusk the flock "flights" out to its feeding-grounds ; for a few minutes the air seems full of them and their noisy "squawks." Their numbers seemed to diminish during my stay, for on May 13th I only saw ten to twelve. They are nearly all immature birds in spotted plumage, and out of forty individuals counted there was only one adult, but Mr. Bonhote tells me that there are plenty of adults there in winter. This "fighting" of Night Herons was noticed by Cavendish Taylor at the same spot many years ago ('Ibis,' 1896, p. 481).

69. *Ciconia alba*, Bechst. — Four seen at Inchas, on the edge of the Arabian desert, on May 2nd, and seven were seen passing high over the Sakkara Pyramids, going north, on May 12th.

70. *Phoenicopterus roseus*, Pallas.—A flock of about a hundred were seen flying over Lake Mariotis on May 14th, and some Arabs, from whom I bought three freshly shot immature birds, assured me that they breed on the lake, and described accurately the nest and egg ; however, I had no time to investigate the breeding-ground. I saw five adults feeding by the northern shore of the lake on May 18th. They were some little distance from land, but as the lake is nowhere deep there must be few places within half a mile of land where this bird could not stand. These immature birds, which I think are twelve months old,

had not the sexual organs enlarged, and they were excessively fat. The gizzards were empty.

71. *Anas boschas*, Linn.—Several seen on Lake Mariotis on May 15th to 18th.

72. *Spatula clypeata* (Linn.).—A flock of about thirty only were to be seen on the Pelican Pond in the Giza Gardens during my stay; the flock gradually diminished in numbers, and the last were noted on May 8th. Some of the males were not quite yet in full adult breeding plumage.

73. *Querquedula crecea* (Linn.).—With the Shovelers on the Pelican Pond in the Giza Gardens were a fair number of Teal, but their numbers gradually diminished during May, and when I left on the 18th there were only about a dozen to be seen. At dusk they used to "flight" with the Shovelers soon after the Night Herons had gone.

74. *Turtur communis communis*, Selby.—Common round Cairo, and especially in the Giza Gardens, during my visit. This species was still passing through when I left on May 18th. *T. communis isabellinus* was not identified for certain.

75. *T. senegalensis aegyptiacus*, Bp.—Very numerous round Cairo and Alexandria, and many nest in the Giza Gardens, &c., and most private gardens on the outskirts of Alexandria seemed to be tenanted by a pair or more. Young were noted on the wing on my arrival on April 29th, while others were still sitting.

76. *Caccabis chukar* (?), Gray.—Birds heard in the Wadi Hof, near Helouan, were ascribed to this species.

77. *Ammoperdix heyi heyi*, Temm.—I met with a pair of this species in the Wadi Hof, near Helouan, where Mr. Nicoll had already located it. They seemed to keep to the rocky sides of the Wadi where I first saw them running, and up which they ran considerably faster than I could! On being close pressed or surprised they took short flights, and worked back to the same spot. From their actions I think there was a nest near by.

78. *Coturnix communis*, Bonnaterre.—Being rather late for the migration, and also not caring to walk through the crops, I only met with a single bird of this species in a rough marshy ground on the outskirts of Alexandria, on May 17th. It showed no sign of having a nest at hand.

79. *Gallinula chloropus* (Linn.).—On Lake Mariotis on May

15th to 18th I caught glimpses on several occasions of Moorhens skulking amongst the reeds ; I saw no young, nor did I find a nest. Mr. Raymond Clarke tells me they are very numerous there in winter.

80. *Ædicnemus senegalensis*, Sw.—Mr. Nicoll thinks that most, if not all, the Stone Curlews seen round the Giza Gardens belong to this species. I only met with it in or near the Gardens. Several "roost" by day on the top of the ruined palace close by, and "flight" into the Gardens at night. I saw some young ones which had been caught near by early in May.

81. *Glareola pratincola* (Linn.).—I met with this species on the bare fields round some pools in the cultivation at Inchas on May 2nd. They were mostly in pairs, and from the state of the organs they were doubtless going to nest there. Their flight reminded me of the buoyant flight of a Tern.

82. *Ægialitis cantiana* (Latham).—Several large colonies were found on an island and on the northern shores of Lake Mariotis on May 15th to 18th. They were breeding on the sand and dry mud, and a nest with three eggs found was a mere depression in the sand. I can find no constant difference between specimens from Egypt and those from England.

83. *Æ. hiaticola* (Linn.).—A pair were seen round a pool near the Sakkara Pyramids on May 12th, and another pair on the northern shore of Lake Mariotis on May 18th. They gave no indication of nesting, and to which form of Ringed Plover they belonged it is impossible to say. Gurney ('Rambles of a Naturalist,' p. 196) and Nicoll ('Ibis,' 1909, p. 644) only met with *Æ. intermedius* (Ménétr).

84. *Hoplopterus spinosus* (Linn.).—Some were seen from the train fifty miles north of Cairo on April 28th, and a few were met with at Inchas on May 2nd. Judging from the ovary of a female obtained there they were doubtless nesting. The flight was very like a Lapwing's, but the note quite different.

85. *Himantopus candidus*, Bonnaterre.—One seen on some pools below the Sakkara Pyramids on May 12th.

86. *Gallinago cælestis* (Frenzel).—One seen on Lake Mariotis on May 13th showed no sign of nesting.

87. *Tringa alpina*, Linn.—One seen on Lake Mariotis on May 16th ; it was in full breeding plumage.

88. *T. minuta*, Leisler.—Three or four seen on Lake Mariotis on May 15th and 18th. Birds obtained were in fresh fully moulted breeding dress, and the organs were not enlarged.

89. *T. temmincki*, Leisler.—Small flock seen by some pools at Inchas on May 2nd. Two individuals secured were in full body moult, and were very fat. Sexual organs not enlarged. Legs and feet yellowish green.

90. *T. canutus*, Linn.—Flock of about eight seen on Lake Mariotis on May 14th. This species has only previously been recorded in Egypt by Mr. Nicoll ('Ibis,' 1909, pp. 646-647).

91. *Machetes pugnax* (Linn.).—Small flock at Inchas on May 2nd were very wild, but no males with ruffs were seen.

92. *Calidris arenaria* (Linn.).—Three seen on Lake Mariotis on May 18th appeared to be in full summer dress.

93. *Totanus hypoleucus* (Linn.).—One at Inchas on May 2nd, and many were seen on migration at Lake Mariotis from May 14th to 18th.

94. *T. ochropus* (Linn.).—A passing migrant seen near the Great Pyramids on April 30th.

95. *T. glareola* (J. F. Gmelin).—Several seen at Inchas on May 2nd, and one at Alexandria on May 17th.

96. *T. canescens* (J. F. Gmelin).—One at Inchas on May 2nd.

97. *Limosa lapponica* (Linn.).—A small flock seen on some flooded fields near Alexandria on April 28th I am pretty sure belonged to this species, which was added to the Egyptian list by Cavendish Taylor from birds obtained in the Cairo Market in February, 1896 ('Ibis,' 1896, p. 481).

98. *Sterna*, ? sp.—A Tern seen in Cairo passing down the Nile looked like *S. fluviatilis*.

99. *S. minuta*, Linn.—A flock seen on May 15th on Lake Mariotis. One obtained had got the testes slightly enlarged. The natives knew it well, and said that it passes through every May, but none stop to breed.

100. *Hydrochelidon hybrida* (Pallas).—Several seen on Lake Mariotis on May 15th. The natives, who knew the birds well, say many arrive there towards the end of the month and breed in the reed-beds.

101. *Larus fuscus*, Linn.—Many adult birds seen in Alexandria Harbour and on Lake Mariotis on May 15th to 19th;

only one immature bird seen. Everyone who has studied birds in Egypt seems to have noted the occurrence of this species in the breeding season, but as yet no one has found it nesting there. I suspect that a good search along the shores of Lake Mariotis might be productive. Cavendish Taylor, in the 'Ibis,' 1891, p. 473, notes that these birds at Alexandria have the mantle darker than northern birds have, and that they have no winter plumage!

102. *Alca torda*, Linn.—The claims of this species as an addition to the Egyptian avifauna rests with a specimen picked up on the shore at Ramleh in the winter of 1908–9 by Mr. Raymond Clarke. He told me the bird was not very fresh. He kept the beak for identification, and gave it to me. I can find no record of the Razorbill in Shelley's 'Birds of Egypt' or in Von Heuglin's book on the birds of North-east Africa. This specimen may of course have drifted some way, but it seems unlikely that when alive it could have been very far from the Egyptian coast.

THE BIRDS OF LINCOLNSHIRE: ADDITIONS TO THE COUNTY LIST.

BY THE REV. F. L. BLATHWAYT, M.A., M.B.O.U.

THE writer knows of no published list of the birds of Lincolnshire as a whole. The excellent works on the birds of the Humber District, completed by the late John Cordeaux in 1872 and 1899, are by far the best published works dealing with the birds of Lincolnshire. But these works take no notice of large portions of the southern and western parts of the county, and also, during the last twelve or thirteen years, new species have been added to the list of the birds of that part of Cordeaux's clearly defined "Humber District" which falls within the boundaries of the county of Lincolnshire. The following notices, taken in connection with the Lincolnshire records in Cordeaux's revised list of the birds of the Humber District (1899), will make up a tolerably complete list of the species of birds which have occurred in Lincolnshire.

Cordeaux's list includes three hundred and twenty-two species, but of these it appears that fifty-two occurred only in Yorkshire, so his Lincolnshire list is reduced to two hundred and seventy. The following seventeen species, some of which appear in the above-mentioned list as having occurred in Yorkshire, may now be added to the Lincolnshire list, while ten others have been here included within brackets to signify that such records are not entirely satisfactory.

Mr. G. H. Caton Haigh, of Grainsby Hall, near Grimsby, prepared, some ten years ago, a list, which he has kindly allowed me to see, of the birds of Lincolnshire for the Victoria County History series, but this, I believe, has not yet been published. Many of the following records have already been noticed in such periodicals as 'The Zoologist,' 'British Birds,' and 'The Naturalist.' The initials G. H. C. H. after a record show that the authority is Mr. Caton Haigh, a gentleman who is well known among ornithologists for his systematic studies of the migratory movements of birds on the north-east coast of Lincolnshire.

1. FIRE-CRESTED WREN (*Regulus ignicapillus*).—One was shot at North Cotes (Lincolnshire coast) on November 9th, 1901 (G. H. C. H.). The species is described as a "very rare autumn migrant to north-west Lindsey," but no record is given; see 'Naturalist,' 1902, p. 202.

2. LANCEOLATED WARBLER (*Locustella lanceolata*).—One shot at North Cotes, November 18th, 1909 (G. H. C. H.). The first recorded British example.

3. BEARDED TITMOUSE (*Panurus biarmicus*).—Formerly an inhabitant of the Lincolnshire fens. No recent records. A specimen shot in north-west of county in 1840; 'Naturalist,' 1902, p. 203.

4. WILLOW TIT (*Parus kleinschmidti*).—Seven specimens were procured near Grainsby in winter between the years 1894–1899 (G. H. C. H.). These were thought to be Marsh Tits (*P. palustris*), but were recognized as the above in 1911; see 'British Birds,' vol. iv. p. 284.

The Marsh Tit occurs commonly near Lincoln, and specimens have been examined by competent authorities. The distribution of these two species in the county requires working out. It is possible that the Willow Tit is only a migrant to the coast districts, and it is not certain that the Marsh Tit occurs in these districts at all. The latter is certainly a resident in the woods around Lincoln.

5. RED-BREASTED FLYCATCHER (*Musicapa parva*).—One shot at North Cotes on September 16th, 1909 (G. H. C. H.).

[RUSTIC BUNTING (*Emberiza rustica*).—A female seen six yards away through glasses by J. Whitaker on September 22nd, 1906, at Chapel St. Leonards, Lincolnshire coast; see 'Zoologist,' 1906, p. 392.]

6. SNOWY OWL (*Nyctea scandiaca*).—Occurred at Bottesford, north-west Lindsey, in the winter of 1868–1869; 'Naturalist,' 1908, p. 399.

7. EAGLE OWL (*Bubo ignavus*).—One shot near Stamford, April 12th, 1879; 'Zoologist,' 1879, p. 306.

8. MONTAGU'S HARRIER (*Circus cineraceus*).—Almost certainly a former inhabitant of the Lincolnshire fens, but definite records are scarce. A female and eggs taken in N.W. Lincolnshire "many years ago"; 'Naturalist,' 1908, p. 399.

9. ICELAND FALCON (*Falco islandus*).—A young female said to be of this species was shot near Lincoln, December, 1900; see 'Naturalist,' 1901, p. 42. The writer has seen this specimen, and it appears to have been correctly identified. It will shortly be in the Lincoln Museum.

10. AMERICAN PEREGRINE FALCON (*F. anatum*).—One obtained, Humberstone, Lincolnshire coast, September 28th, 1910. The first recognized capture of this species in Europe (G. H. C. H.); see 'British Birds,' vol. v. p. 219.

11. RED-FOOTED FALCON (*F. vespertinus*).—One was shot by a keeper at Panton, near Wragby, on May 15th, 1902 (G. H. C. H.).

[LITTLE EGRET (*Ardea garzetta*), BUFF-BACKED HERON (*A. bubulcus*).—An example of each of these species is in the Lincoln Museum. They were formerly bought by Mr. F. Baines, of Gainsborough, at a sale in Boston about 1865, and were said to have been captured a few years previously in the fens near that town. The history, however, of the specimens is not satisfactory, and perhaps both are Continental specimens. There is an unsatisfactory notice of the capture of a Great White Heron (*A. alba*) in Lincolnshire in Yarrell's 'British Birds,' ed. 4, vol. iv. p. 179. An undoubted example of the Squacco Heron (*A. ralloides*) was shot on the Humber Bank, Great Cotes, on Sept. 29th, 1910 (G. H. C. H.). This is the second record of this species for the county, the first example having been procured about fifty years ago.]

12. RED-CRESTED POCHARD (*Fuligula rufina*).—Specimens were shot near Boston in the years 1826 and 1854; see Yarrell's 'British Birds,' ed. 4, vol. iv. p. 408.

13. PRATINCOLE (*Glareola pratincola*).—One shot near Brantston Hall, Lincoln, August 15th, 1827; see Yarrell's 'British Birds,' ed. 4, vol. iii. p. 283. Another is said to have been killed on Brumby Common in the north-west of the county some years ago (Peacock).

[LITTLE RINGED PLOVER (*Ægialitis curonica*).—One obtained, Holbeach Marsh, September, 1894; see 'The Naturalist,' 1900, p. 27. In the absence of confirmation of this record, it is perhaps safer to assume that the specimen was an example of the small Continental form of the Ringed Plover (*A. hiaticola*).]

14. BLACK-WINGED STILT (*Himantopus candidus*).—The figure

in Yarrell's 'British Birds,' ed. 4, is from a specimen obtained in Lincolnshire in July, 1824.

[PECTORAL SANDPIPER (*Tringa maculata*).—Messrs. Fieldsend and Nash, lately birdstuffers in Lincoln, informed the writer that they received two examples of this species to preserve, shot in August about the year 1895 near Wyberton, Boston.]

15. BUFF-BREASTED SANDPIPER (*Tringites rufescens*).—One shot at North Cotes, September 20th, 1906 (G. H. C. H.).

[BARTRAM'S SANDPIPER (*Bartramia longicauda*).—A freshly killed specimen, purchased in Leadenhall Market, and said to come from Lincolnshire, was identified by Mr. J. E. Harting on October 27th, 1880; see 'Zoologist,' 1880, p. 508.]

[WHITE-WINGED BLACK TERN (*Hydrochelidon leucoptera*).—H. Nash, lately a birdstuffer in Lincoln, informed the writer that he saw this species when fishing off Gibraltar Point, Lincolnshire, a few years ago. He also saw the species there some twenty-five years ago. It seems unlikely that so striking a species could be mistaken for any other, and there is no reason why it should not occasionally visit the Lincolnshire coast, as eight were seen on Breydon Water, Norfolk, on April 22nd, 1901; see 'Zoologist,' 1902, p. 88.]

16. CASPIAN TERN (*Sterna caspia*).—One was shot at Caythorpe, near the Notts border, May 17th, 1851; Yarrell's 'British Birds,' ed. 4, vol. iii. p. 537.

[GREAT SKUA (*Megalestris catarrhactes*).—Mr. Caton Haigh thought he saw one at sea off Donna Nook, September 21st, 1901; 'Zoologist,' 1902, p. 132.]

17. GREAT SHEARWATER (*Puffinus gravis*).—Probably often occurs at sea off the coast, but there seem very few records. One was shot near the mouth of the River Welland, November, 1902; see 'Zoologist,' 1903, p. 80.

[SOOTY SHEARWATER (*P. griseus*).—Cordeaux thought that this species was more frequent off Flamborough Head, Yorks, than *P. gravis*. On September 15th, 1911, during a gale from the north, Mr. Caton Haigh saw four or five large black Shearwaters close to land off the north-east Lincolnshire coast, which he thought were examples of *P. griseus*.]

NOTES ON THE WHIRLIGIG BEETLE
(*GYRINUS NATATOR*).

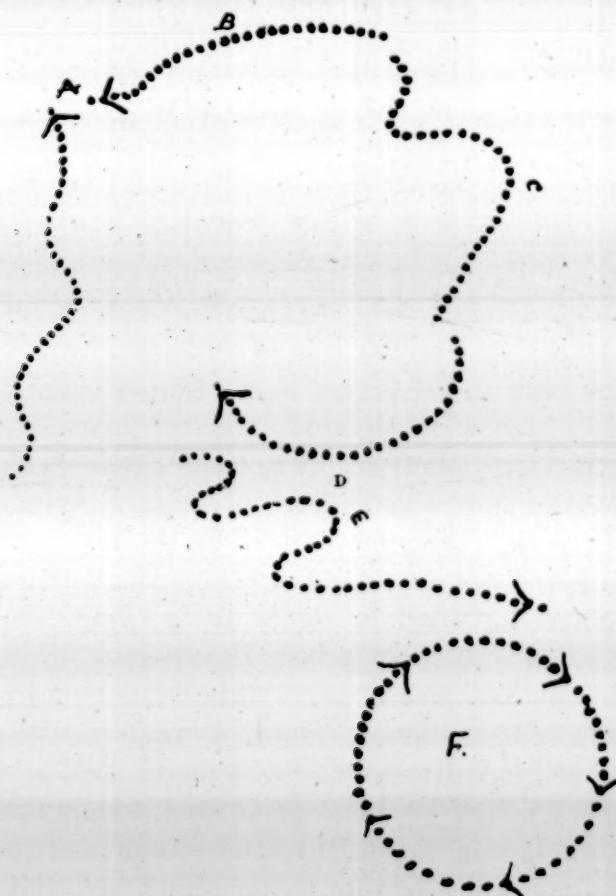
BY GORDON DALGLIESH.

BEING one of the commonest of British aquatic beetles, the Whirligig is in consequence easy to study in its wild state. There is hardly any pond where it may not be found, provided the conditions are favourable for its mode of life. Swift running water it shuns for reasons which are obvious, but a stream with a gentle flow, especially where a back eddy causes pools of clear water, it occasionally favours with its presence, though its haunt *par excellence* is a pond free from much surface-covering weed, where it can have full scope for its play. Prof. Miall's delineation in comparing its movements to those of Swallows and Bats is a happy one, for this exactly portrays its whirling performances—those delightful mazy, intricate dances that cannot fail to have charmed those who take an interest in water "beasts." To my mind, a number of Whirligigs always bear a fanciful resemblance to a flotilla of torpedo-boats, and the torpedo shape of *Gyrinus* fits it exactly for its manner of life. If a single Whirligig be picked out and carefully watched, it will be seen that it progresses by a series of jerks. This is not so noticeable when viewed *en masse*. Each beetle, too, is surrounded by a circular depression about the size of a shilling, owing to the tension of its weight on the surface-film. Swimming is seldom performed in a straight line, but in that of serpentine curves, and the beetle frequently rotates, so to speak, on its own axis. Now and again a pair will waltz round each other without coming into actual contact. They frequently chase each other, the pursued keeping about its own length ahead of the pursuer until finally overtaken, when both execute a *tête-à-tête* circle. This proceeding is sometimes, though not always, the prelude to an amorous embrace. I have seen pairing take place as early as the middle of March, which is but of

brief duration, reminding one of similar actions on the part of the house-fly. *Gyrinus* always descends to the depths in a spiral curve. They frequently lie motionless on the surface from three to five minutes at a time. The heat of the sun always tends to make them more lively, but sunlight is not essential to them as to some insects, being frequently seen gyrating on cloudy and even cold days, but then only singly or in pairs. They are never seen in any large numbers until early summer is well advanced.

For some reason which it is difficult to explain, in 1909 the Whirligig Beetle was missing in some of its accustomed haunts, where previous to this I had never failed to find it. Though of small size—quarter of an inch in length—its surface-clinging propensity renders it easier of observation than those insects which habitually live beneath the water; for these can never be studied with any degree of confidence except in confinement, which even under the most favourable conditions cannot compare with that of their wild lives. *Gyrinus* does not take well to confinement, all attempts to keep these interesting little beetles in captivity always ending in failure. When thus kept they either "sulk," lying motionless on the top of the water, or swim round and round beneath. Also they will not execute their characteristic whirl to charm their captor, but make all possible speed to quit their prison by climbing up the sides of the vessel they are placed in. This, disappointing as it is, is what would be naturally expected when we learn more of their mode of life. Let anyone who would wish to make them prisoners go for half an hour or so and watch them in their natural haunts, and he will soon become convinced of the futility of such an attempt. One might as well confine a Swallow in a large cage, and expect it to show there its powers of flight. Watch the widening and ever-widening circles, curves, turns, and twists of a number of Whirligigs; then it will be understood that room, and plenty of it, is what these insects desire. By rough calculation, I have determined that *Gyrinus* measures while swimming, in less than the space of one minute, seven hundred and twenty times its own length; so that some small idea can be formed of the enormous area it would cover in the space of a few hours. And this calculation could only be

gained, providing the insect kept straight on its way without any curves, twists, or gyrations ; these being counted in would add considerably to the total just quoted. It seems strange that insects with such fully developed wings should, comparatively speaking, use them so little. Some captives I had made no attempt at flight, but endeavoured to leave their prison by



Diagrammatic sketch of swimming actions of *Gyrinus*. The dotted lines represent the various turns and twists executed while gyrating. The arrow-heads denote the direction taken. When two beetles meet (as they frequently do) at A, a chase ensues, and the route then taken is indicated at B, C, D, and E, which ends in the characteristic twist, a complete circle, at F.

crawling up the glass sides ; nor do they attempt to fly when taken in the net and placed on dry ground, but run with far greater speed than one would expect of an insect gifted with such

curiously modified limbs. Prof. Miall states* that *Gyrinus* is unable to fly from the surface of the water direct, but must needs first climb the stem of a plant. I think I am correct in stating that the sensory organs of most insects lie in the antennæ, but *Gyrinus* depends not alone on these for the detection of its sustenance;† eyesight here plays no small part. The compound eyes of the Whirligig are well known to those who are acquainted with these insects, but I may be here allowed, for the benefit of the uninitiated, to briefly dwell upon their peculiarities. They consist of two separate portions interposed by the socket of the antennæ. Some writers have thought that the facets of one portion are for vision alone, and the other portion for vision below the water. Referring to this, Prof. Miall says‡:—"I once endeavoured to determine by direct observation whether the lower patch is actually submerged or not, but found that the capillary curves above the head and body render it very difficult to decide where the water-line curves. These curves must greatly obscure, or at least limit, vision by the lower lenses." The large Water-beetle (*Dytiscus marginalis*), I have found, depends—at any rate, to very great extent—on its antennæ for food. A captive *Dytiscus*, when at rest, took no notice of small pieces of raw meat dropped just in front of it, but not close enough to come in actual touch with the antennæ; but a piece of meat held between forceps and gently lowered into the water, and made to come in contact with the antennæ, was at once seized. On one occasion I threw a dead fly on to the surface of the water in a vessel containing some captive Whirligigs. At once two or three of the beetles clustered round it, and, after toying with it for a moment, left it. Here sight must have been the leading factor that drew them to the fly.

It may not be out of place here to say a few words about the sense of fear in insects. This is rather a complex subject which others more qualified than myself are better able to study, so I will but briefly touch upon it. In the full meaning of the word, as the higher animals know it, insects have no fear, or, if they

* 'Aquatic Insects.'

† I have here purposely not made use of the word "prey," for, as far as my own observations go, *Gyrinus* is a scavenger.

‡ 'Aquatic Insects.'

have, it is but momentary. A Dragonfly (*Libellula depressa*) will return again and again to the strike of the net—nay, more, if, when caught and held captive by the wings, will take flies greedily from the hand of its captor. All feeling of fear in insects seems to be swallowed up in the insatiable desire for food. In the summer of 1909 I confined a Newt about a quarter grown in a small bottle of water, together with a Water-boatman (*Notonecta glauca*), for the purpose of taking home alive. I knew well the voracity of *Notonecta*, but thought the cramped confinement, added to the darkness of my pocket, and the inevitable shaking that must of necessity ensue, would have the desired effect, namely, of preventing the "Boatman" from attacking the Newt. Not so, however, for on my return home nothing remained of the Newt but a lifeless sucked skin. The captive Whirligigs mentioned above had been subjected to the same treatment as *Notonecta*, and had hardly been in captivity more than a few minutes before the fly was offered to them, yet they seized upon it at once. Here, again, the ever-present desire to feed conquering (if any) all sense of fear. The eyesight of *Gyrinus* is remarkably keen, much more so than in a number of other insects, and nearly rivalling that of dragonflies. The shadow of an observer falling on the water, or a too near approach, is quite sufficient to send a party of them scattering in all directions.

The expanding paddle-legs of the Whirligig are beautifully adapted for the functions they have to perform. Unfortunately, owing to the small size of the insect and its extreme rapidity of motion, these cannot be studied satisfactorily in the living insect, though every now and then something of their actions can be made out by watching the insect in a glass of water. Prof. Miall, in his delightful little book, 'The Natural History of Aquatic Insects,' has likened the structure of these paddle-legs to those "ivory tablets used for memoranda, which are held together by a pin, so that they can either be opened fanwise or closed in a moment." It is these short paddle-legs that give so great an impetus to the swimming powers of *Gyrinus*. *Dytiscus*, with its "feathered" rowing-legs, though it may (but I doubt this) swim as fast as *Gyrinus*, has not the same facility of turning, twisting, or rotating. Take, for example, two men,

each in small light boats. One has long oars for rowing, the other is provided with a short paddle. The one with the paddle will make greater progress than the one with the oars. The man with the paddle, too, will have more control over his boat as regards turning or stopping dead than the man with oars. So it is with *Gyrinus* versus *Dytiscus*. A well-prepared microscope slide of an expanding paddle of *Gyrinus* reveals at once its marvellous structure, when viewed under a low power; it is, moreover, one of the most beautiful objects that fall to the lot of the microscopist. The paddles, too, are aided in their work by long, stiff hairs which fringe them. The second or middle pair of legs are expanded as well, though in a less degree. The first pair of legs are in a way no less wonderful than the paddles. They are prehensile, and when not in use are kept tucked away out of sight. In the male the tarsal joint bears sucker-like organs, which are thought by some writers to be of use in the detention of the female, and probably this theory is the correct one.

Whirligigs possess a certain amount of curiosity, and will stop in their peregrinations to examine any object that lies in their path. I noticed once, when watching these insects, a piece of lichen fall from a tree near by into the water. This immediately attracted two or three beetles, which stopped to see what it was, and if they examined this once they did so a score of times during the brief space of time I watched them. A Whirligig beetle taken on March 24th, 1910, I confined in a glass of clear water. This particular specimen, contrary to the others mentioned above, made no attempt to leave the glass, but swam round and round beneath the water, hardly stopping a moment, for the space of three hours or so, greatly upsetting the equilibrium of a number of a species of gnat larvæ confined in the same vessel. It made no attempt, however, to prey upon its fellow-prisoners, and at sunset became inactive, almost sluggish in its movements, at length sinking to rest tightly clinging to a piece of weed which, in spite of severe shaking of the glass, it refused to quit. As the cold of evening advanced, it seemed to sink into a state of coma. The following day being cold it remained in the same state.

Gyrinus is in a singularly happy condition to bid defiance to

most of its foes. The milky, evil-smelling fluid that exudes from all its joints would, I imagine, render it an exceedingly nasty morsel to any other animal that would prey on it. Its convex shape makes it difficult to hold, and in attempting to do this many a Whirligig has slipped through my fingers. The only pond-insects that would be likely to prey on it are *Dytiscus*, *Notonecta*, *Naukoris*, and possibly *Nepa*. The jaws of *Dytiscus* and the grasping legs of *Naukoris* and *Nepa* would experience some difficulty in holding such a slippery little object. Fish would no doubt swallow it with impunity, but *Gyrinus* generally inhabits waters from which fish of any size are absent. The pugnacious Stickleback doubtless attacks it, but the small mouth of this fish would not admit an insect the size of *Gyrinus*. Moreover, its keen sense of vision, added to its celerity of movement, aids it considerably from most attacks. Kingfishers I suspect of occasionally preying on it, as I once watched one plunge several times into a small pond devoid of all fish-life, only being inhabited by Whirligigs and a few Newts. I wondered at the time what it was feeding on, and came to the conclusion it must have been these beetles, but, being afraid of driving away the shy bird, could not verify my suspicions.

The early life of *Gyrinus* appears to be shrouded in a certain amount of mystery. Schiödte, in 1862, seems to have been the first naturalist to figure and describe the larva. Scherren says regarding it:—"The larva is not well known, and not often met with by collectors. I have taken examples in the River Ant, not far from North Walsham. When collecting there I was fortunate enough to find a couple, but one was damaged in putting it into a bottle. Both were found in pipe-weed (*Enteromorpha intestinalis*), and it may be that this is the usual habitat. If so, it would quite account for the larva not being more frequently met with."* I have never been fortunate so far as to find a specimen, but a very good figure and description of it will be found in Miall's 'Aquatic Insects,' referred to more than once in these pages. I can find nothing of importance on record regarding the breeding of *Gyrinus*, this doubtless being due to difficulty experienced in keeping the beetles in confinement; but it is certain, from the observations of trustworthy observers,

* 'A Popular Natural History of the Lower Animals.'

that it is, at any rate, double-brooded. I have very good reasons for assuming that oviposition begins as early as March, as I am certain a captive specimen was in the act of ovipositing, but, owing to an unfortunate accident, I was unable to verify this. The attitude this specimen adopted was exactly similar to that of *Dytiscus* when ovipositing. A stem of weed was grasped firmly by the front pair of legs, the insect lying lengthways on it. The abdomen was constantly in motion in an up and down direction. Finally, the extreme tip of the abdomen was fixed to the weed. At this juncture important business called me away, and I had not another opportunity of watching the insect. The pupa of *Gyrinus* has seldom been found, but Miall says:—"At the beginning of August the larva creeps out of the water by climbing up the water-plants, and then spins a greyish cocoon pointed at both ends."* The ova apparently has not been described.

Some naturalists have said that *Gyrinus* is capable of making a squeaking noise by means of its wing-covers against the end of the body, and this has been thought to be a call to others of its own species.

* 'Aquatic Insects.'

NOTES AND QUERIES.

MAMMALIA.

Mus rattus at Yarmouth.—Recently I have met with a few examples of *Mus rattus* (the Black Rat), several of them, owing to the closing of some adjacent dilapidated houses, having found their way to a sail-loft, where the fat used in making the sails supple for sewing has been the attraction. This same loft is invaded at intervals from some adjoining maltings. On the afternoon of Dec. 30th, 1911, I was asked to call in at a smithy in the heart of the town to see a Rat unusually marked. The specimen, a three-quarter grown *M. rattus*, was distinguished by what looked to me, in the rather dim light, and by artificial light, a pure white line running from the nape of the neck to the slope of the posterior; all four legs and the belly were also white. I noticed the poor beast, in its endeavours to escape, had chafed the skin off its nose. Filling an iron bath at the tap, I plunged the cage under water, when the unhappy creature was speedily drowned. I dispatched the carcase, still wet, to Dr. Ticehurst, of Lowestoft, who assures me that what I assumed to be white was really a pale lemon, very like the "white" on a discoloured Ermine.—A. H. PATTERSON (Ibis House, Yarmouth).

AVES.

Nocturnal Redwings.—Perhaps I may be permitted to reply now to one or two comments on my Redwing paper in the last volume of 'The Zoologist.' Mr. Warren's note (p. 429) is too obviously valuable to need much comment; unfortunately, I can see no present use for it, and must be content to file it for further use. I think I must refer Mr. Booth back to my first note; we are still lacking proof that these calling birds *are* migrants in the usual sense of the word. Of course the word "migrant" is most inconveniently vague. From the Sparrow-Hawk beating its daily round with clockwork regularity, the Gull returning to sleep each night on its lake, or the Cormorant on its tower or cliff; from the punctual autumnal migration of the Grouse from heather to barley, or the irregular movements of frozen-out Grebes—from all these, to the Grey Plover or the Cuckoo, the

same word "migrant" is applied. Now, if we do get enough evidence (and I am yet seeking it) to prove beyond doubt that these voices are nothing but the calls of normal winter migrants, we are faced with another and a stiffer problem: Why, of all our Oscines, is the Redwing the only one that does not change its quarters silently? We have Thrush, Robin, Blackbird, Rook, Lark, Fieldfare, Chaffinch, and many others all amove throughout the year, and our ears are deaf to them.

In the middle of January the North of England was deep in snow; the Sky-Larks vanished to a bird from the fields. Presumably the Redwings moved also—I am not sure. In the South of England the weather was abnormally mild, and we *seem* to have had an influx of various birds. Night after night I stood out listening for the Redwings, and did not hear a solitary note. Does this mean that they were not on passage? Why do they call most during the first week in November, when, if I am to believe the evidence of my eyes, the immigration is in full force in the previous month? Why are they comparatively silent during the spring migration? Why are they always at or about the same altitude, following (from the evidence of our ears) all the contours of the highest hills and the deepest valleys?

Observant friends and correspondents think, and some are positive, that they recognize the admittedly similar notes of Thrush and Blackbird amongst these night calls. This will not do for an instant, for it leaves us waiting for some explanation of the silence of these two birds during July, August, and September—months when one or both species are under weigh. Notes heard when we had reason to believe there were no Redwings in the country would be worth chronicling.

In answer to the second part of Mr. Power's note (p. 481), I must say that I cannot think the song of the Redwing a very beautiful one. Possibly it gets polished up a bit in the memory of the tourist who has listened to it in Scandinavia. When I wrote my note I said it only sang in fine weather, but on Dec. 26th, 1911, an abominably wet and cold day, Mr. P. W. Horn and I noticed many in full song near Theydon Bois. The best way to learn the song is to make a point of examining the hedgerow or other trees every time the chorus from a small flock of Starlings is heard. Very soon, with a little fortune, and by the exercise of sufficient woodcraft to keep from alarming this strangely timid songster, the observer may trace the apparent chorus to a single Redwing, and, when he has achieved this, it is a simple

matter to notice the difference between the two sounds, and to remark also that, instead of the "Thrush-like single notes" described by some writers, the interjected clear calls are more like the *monosyllables* used by the nesting Common Sandpiper against an intruder. The song is a common feature of the winter chorus of our fields, but as most people only make its acquaintance by the rarest of accidents, it has the reputation of being a rare phenomenon. When the birds sing in concert, as is frequently the case, a near approach is a difficult business; but in the bare tree-tops it is easy to see from a distance by the help of a good glass whether Starlings are present or not, and one can generally detect an odd bird with the characteristic gestures of a songster.—FREDK. J. STUBBS.

Nutcracker: Structure of Tongue.—Mr. Tuck (*ante*, p. 34) will find in 'Zoographia Rossio-Asiatica,' Pallas, 1831, vol. i. p. 398, particulars of a further peculiarity in the structure of the tongue of this bird (*Nucifraga caryocatactes*). The passage is as follows:—"Linguæ frenum laxum, in saccum sublingualem dilatabile, qui ad Laryngem usque per gulam extenditur, et in quo avis nucleos Cembræ ultra 50. semuncialis ponderis, circumfert." — THOMAS GROUND (Kenilworth).

Little Auks at Rochdale.—Feb. 1st: Female caught alive in a cotton-factory yard (Mitchell Hey), Rochdale. Lived three days. Feb. 5th: Male caught alive, Spring Cottage, Smallbridge, Rochdale. Lived a few hours. — F. WILLIAMSON (Art Gallery and Museum, Rochdale).

At CHESTER.—Two specimens of the Little Auk (*Mergulus alle*) were taken in the Dee at Chester on Saturday and Sunday, Feb. 3rd and 4th. One was killed with a stone, and the other specimen was picked up dead at the water's edge by some boys. The stomach of one contained roots of plants, the other was completely empty.—A. NEWSTEAD (Chester).

AT KETTERING.—Feb. 3rd: A Little Auk was found by a workman in a field near Kettering. It was in an exhausted condition, and died shortly after. Another was shot near here last week, but this bird was in good condition. I saw both the birds at Field's, our local birdstuffer. A Large Black-backed Gull was sorting over the horse-droppings in one of our streets, Feb. 6th.—CHARLES E. WRIGHT (Woodside, Kettering, Northampton).

Causes of our Rare breeding Birds disappearing.—I beg to correct a mistake in my notes in last month's number by omitting an extract from 'The Zoologist' in the 'Irish Naturalist' for 1908: "'The

Zoologist' (1908, p. 33) contains notes from Mr. W. J. Williams of two immature Ospreys shot in Co. Sligo in November, 1907," proving that between 1900 and 1911 two specimens have been taken in Ireland, but immature: also the name of "Lough Arrow" instead of "Arron" should have been printed.* — ROBERT WARREN (Ardnaree, Monkstown, Co. Cork).

IN Mr. Warren's original letter (Zool. 1911, p. 391) he stated that a dealer had ten eggs of Golden Eagle and fifty of Osprey in his possession, "thus showing plainly why the Golden Eagles and Ospreys of Scotland are so steadily vanishing." In my reply I stated that the Golden Eagle in Scotland, instead of vanishing, has enormously increased in numbers of late years. It is therefore untrue to say that collecting their eggs either by dealers or amateurs has brought their numbers down anywhere near vanishing point, or even seriously reduced them. On the other hand, the Osprey in Scotland is on the verge of extinction. Mr. Warren ascribes this to egg-collecting. On the other hand, I assert with confidence that it is due to the killing of the Ospreys themselves on migration. Their eyries, though well protected, and not interfered with by collectors, are deserted one by one, because either a single bird returns alone and fails to find a mate, or both birds fail to put in an appearance. My reasons for believing that the Irish-killed birds represent the Scottish breeding stock are based on the study of the "fly-lines" of this species. The Ospreys which arrive in our east coast counties (*e.g.* Yorkshire) in the autumn and work their way down south (accompanied by Honey-Buzzards and immature Sea-Eagles) are not likely to be Scotch birds, but are almost certainly immigrants from Scandinavia. On the other hand, the birds which have been killed in Ireland, especially those on their way north in the spring, are in all probability Scotch-reared birds. I distinctly stated that "we are not guiltless in the matter in England, but I am inclined to think that the English-killed birds are generally of Scandinavian rather than Scotch origin." This is a very different thing from stating it as an ascertained fact, though personally I have little doubt on the matter.

With regard to the alleged occurrences recorded in the 'Irish Naturalist,' I venture to print Mr. Warren's statement side by side with the results of my own investigations, and leave the readers of 'The Zoologist' to draw their own conclusions:—

[* We would again ask our contributors to write the names of localities and persons in capitals.—ED.]

Mr. Warren's statement (*ante*, p. 38) :—

"I have taken a period of eleven years, from 1900 up to the past year (1911), and, having taken the trouble to examine the pages of that journal for the period named, can only find *two* references to Ospreys [not recorded as killed]. . . . So for the *eleven years* there is no record in the 'Irish Naturalist' of any slaughter of Ospreys!"

Rev. F. C. R. Jourdain's investigations :—

I did not restrict my observation to 1900 and the following years alone. I believe I am correct in stating that Ospreys are recorded as slaughtered in the 'Irish Naturalist' for May, 1893, again in February, 1895, and, I believe, also in October, 1900, though I have not the last number at hand for reference. Still it comes within Mr. Warren's period. Again, in 1907 (p. 352), one is mentioned as killed near Drogheda. In 1908 two immature birds are recorded for Co. Sligo (p. 78), and in 1910 (p. 13) an adult female from Lough Erne. Total: seven birds killed between 1893 and 1910, or *five in the eleven years during which Mr. Warren states that there is no record!!* all of which are mentioned in the 'Irish Naturalist.'

(As to Mr. Henderson's record of an Osprey seen but not shot, it may interest Mr. Warren to know that Mr. Henderson and I decided not to send this record to the 'Irish Naturalist' till the bird should have had time to get out of Ireland, lest it should meet with the same fate which overtook its relatives.)

Mr. Warren seems to think it a bold statement on my part to assert that the dealer's stock in question could not have consisted of British-taken Ospreys' eggs. He is apparently unaware of the fact that British-taken eggs are so few in number that their value is in proportion to their rarity, while, on the other hand, American eggs are only worth as many shillings as Scotch eggs would be worth pounds. No dealer could afford to offer such valuable specimens for exchange, even if procurable, which is not the case. I fail to see why the Kite should be dragged in this discussion. It is a sedentary species, and does not migrate across Ireland. The protection now afforded to it—partly, I may venture to say, in response to an appeal made by Prof. Salter and myself some years ago—has resulted in a considerable increase in the stock, and this fine bird is now in no immediate prospect of extinction.

There is no doubt that the Osprey did suffer severely in the past from egg-collecting, and also shooting, on the part of such men as

John Wolley, Charles St. John, W. Dunbar, and others. But to make attacks on the egg-collectors of the present day without evidence in support of the charge, when all thinking naturalists are aware that the disappearance of the Osprey in Scotland, like that of the Sea-Eagle and Golden Eagle in Ireland, is due to an entirely different class of men, is a proceeding which can do no good to the cause of bird protection. Moreover, as Mr. Warren's assertions have proved to be erroneous, it is not possible to attach much value to the inferences he draws from them.—F. C. R. JOURDAIN (Clifton Vicarage, Ashburne, Derbyshire).

NOTICES OF NEW BOOKS.

Eugenio Rignano upon the Inheritance of Acquired Characters.

Translated by BASIL C. H. HARVEY. Chicago: The Open Court Publishing Co.

THE author of this book has approached the subject in a very fair and candid manner. He has not only brought together the results of experiments made by many eminent investigators, but he has also considered with great equity the views and arguments of those who are opposed to his generalisations. Thus he writes:—"The great service of Weismann, which is not yet appreciated highly enough, is that he brought forward this matter of the inheritance of acquired characters, and questioned its existence, which previously had been not only tacitly admitted by most biologists, but regarded as not needing proof. And we must recognize the fact that the great and justifiable desire to find for this inheritance some proof which should be irrefutable and not open to any objections has remained so far unfulfilled."

Signor Rignano lays great stress on the theory of functional adaptation. He asserts that "the decisive experiment upon the inheritance of acquired characters must leave amputations and similar sudden variations out of consideration, since either their effect is to bring about the re-establishment of an exclusively local equilibrium or the repetition in the descendants of the phenomena by which the parent organism reacted is hindered.

This experiment must rather be directed toward modifications of the functional adaptation, which have a very extensive action, and whose repetition in the descendants is not hindered by anything."

We can thus only give an indication as to the author's stand-point and argument; his book is one that requires careful study, and will not give an adequate reward for hasty perusal, and the reader, whether he becomes a convert or opponent to the view of inheritance of acquired characters, will at least have acquired a digest of the conclusions formed, favourable or otherwise, by many of the very foremost and advanced biologists.

This work appeared originally in French (1906), and later in German and Italian. Its translation into English is due to American philosophical enterprise.

The Great Auk: A Record of Sales of Birds and Eggs by Public Auction in Great Britain, 1806-1910, with Historical and Descriptive Notes. By THOMAS PARKIN, M.A., F.L.S., &c. Hastings: Burfield & Pennells, Ltd. London: Rowland Ward, Ltd.

THE design of this booklet is to place on record the particulars as to date, ownership, price, and name of purchaser of the various specimens of *Alca impennis*, and of eggs of the species which have been sold by auction in Great Britain. This has been done with considerable detail, for Mr. Parkin has taken great pains and trouble to secure all available information. As regards the number of skins and eggs of the Great Auk that may be said to be still in existence, the author states, on the authority of Mr. Edward Bidwell, that there are eighty skins and seventy-three eggs. This publication contains five plates, one of the most interesting of which is a photo-block of a gathering at Stevens's Auction Rooms on the occasion of the sale of a Great Auk's egg on June 7th, 1910. This might well be enlarged and sold separately, as many would like to hang a memento of the well-known sale-rooms with which most naturalists and collectors are familiar.

A Naturalist on Desert Islands. By PERCY R. LOWE, B.A., M.B., &c. Witherby & Co.

THE private yacht is now a factor in zoology ; it is taking the place of the old "discovery ship." A few years ago Mr. M. J. Nicoll published his record of three voyages made on board the Earl of Crawford's yacht, 'Valhalla' ; in this volume Dr. Lowe describes his experiences and observations on some little-known islands which he visited with Sir Frederic Johnstone on board the latter's yacht, 'Zenaida.' The islands visited in the Caribbean Sea were Swan Island, Blanquilla, and The Hermanos. Dr. Lowe describes the geological and faunistic aspects of these islands with considerable scientific knowledge, and with the entertaining pen of a born journalist ; the lists of birds have been previously and elsewhere described. The book is very nicely illustrated, and there is more discussion of natural cause and effect than is at once apparent in the easy and pleasant diction of this naturalist's narrative. It is a very stimulative volume to peruse, and there are some zoological nuggets in its pages.

The Sportsman's Handbook to Collecting, Preserving, and Setting-up Trophies and Specimens, together with a Guide to the Hunting Grounds of the World. By ROWLAND WARD, F.Z.S. Tenth and enlarged edition. Rowland Ward, Ltd.

WE are glad to possess another and the tenth edition of this excellent handbook, an indispensable travelling companion to the sportsman and naturalist abroad. We well remember obtaining the sixth edition in 1891 when sojourning in the Transvaal, and equally recollect the many obligations we were under to it in those days. The present edition is considerably augmented in size, and the information brought up to date. The section relating to "Hunting Fields of the World" is now much amplified, and will help to guide the choice of the sportsman who is blessed with the potentialities for foreign travel. This small volume will also give him intelligent and simple directions for preserving zoological specimens. Many men commence as sportsmen and end as naturalists ; this handbook will tend to assist that evolution.

WITH the new year several noteworthy changes have ensued in the editorial management of some of our best-known publications:—

Dr. J. A. Allen, finding that his health demanded relief from some of his numerous responsibilities, has been forced to resign the editorship of the 'Auk,' and the Council of the American Ornithologists' Union have chosen Mr. Witmer Stone as his successor. Simultaneous with Dr. Allen's retirement, Mr. Frank M. Chapman resigned as Associate Editor. Dr. Allen has guided with conspicuous ability the course of the 'Bulletin' of the Nuttall Ornithological Club, and its successor the 'Auk,' through thirty-six volumes, a record for which he may justly feel a scientific pride, and for which all ornithologists will offer him their sincere congratulations.

The 'Annals of Scottish Natural History,' the old quarterly issue with which we are all so well acquainted, and has reached its twentieth volume, now appears as a monthly journal under the name of 'The Scottish Naturalist,' and no longer includes botany, but is entirely devoted to zoology. Mr. Harvie-Brown retires from the position of a principal Editor, but still assists the editorial triumvirate, which consists of Mr. William Eagle Clarke, Mr. William Evans, and Mr. Percy H. Grimshaw, with the assistance of other well-known naturalists. The new publishers are Oliver & Boyd (Edinburgh), and their branch, Gurney & Jackson (London).

The first part of 'The Austral Avian Record,' edited by Mr. Gregory M. Matthews, has appeared, published by Witherby & Co. (London), and "issued in connection with the Austral Avian Museum, Watford, Herts, England." It is to be published at irregular intervals, and will contain such notes as the Editor deems necessary to require immediate attention, and referring to birds which either have been already treated of in his 'Birds of Australia,' or will not be dealt with in the immediate future.

